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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/728,334
Filing Date: December 04, 2003
Appellant(s): SUMI ET AL.

Loretta F. Smith
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 5/18/09 appealing from the Office action mailed 6/21/06.

(1) Real Party in Interest

A statement identifying the real party of interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

WO 01/48086	Harashina et al.	July 5, 2001 (English language translation attached)
US 4,742,109	Takahashi et al.	May 3, 1988

(9) Grounds of Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harashina et al (WO01/48086, English Translation) in view of Takahashi et al. (US 4,742,109).

Prior art to Harashina et al. discloses flame retardant resin compositions comprising polyalkylene terephthalate resin with improved flame retardancy through the use of phosphazene compound and phenolic resin (page 4, lines 14-18). As polyesters, a variety of polyalkylene

terephthalate series resins are disclosed on pages 6 and 7, lines 22-24 and lines 1-17, respectively.

The disclosed compositions include phosphorous-containing compound in amounts of 1 to 40 parts by weight per 100 parts of polyester resin (page 15, lines 11-14). Additionally, as the phenolic resin, novolak resins, aralkyl resins and polyvinylphenol series resins are disclosed as being useful in amounts of 1 to 40 parts by weight per 100 parts of polyester resin (page 18, lines 1-5). In addition to the phosphazene-containing compound, other flame retardants such as resorcinol bis(diphenyl phosphate) and resorcinol bis(dixylyl phosphate) may be used in amounts of 0 to 50% by wt., relative to 100 parts of polyester resin (page 20, lines 3-17, page 19, lines 12-19).

The disclosed resin compositions may optionally include 1 to 60% by wt. of fillers such as kaolin, mica, talc and calcium carbonate (page 23, lines 1-8). Working examples in Table 2 (page 37) exemplify compositions comprising polyester, phosphazene-containing compound, novolac-based phenolic resin and filler in amounts within the ranges recited in instant claims 1 and 2. Additionally, working example 13 in Table 2 exemplifies a composition comprising resorcinol bis(dixylyl phosphate) and phosphazene-containing compound. The phosphorus containing flame retardant recited in instant claim language reads on phosphazene-containing compound or a combination of phosphazene-containing compound and resorcinol bis(dixylyl phosphate).

The difference between the prior art and the present invention is that the prior art does not disclose flame retardant compositions comprising an acrylic resin in amounts of 1 to 25%, based on the total wt. of the composition.

The secondary reference to Takahashi et al. concerns polybutylene terephthalate (PBT) compositions useful as engineering plastics. The polyacrylate resin is composed of a multistage polymer having a rubber-like first stage and a thermoplastic rigid final stage (column 1, lines 60-68 and column 2, lines 1-14). This prior art discloses that addition of flame retardants to mitigate the flammability of PBT results in a decrease in impact resistance and extensibility of the molding composition. The prior art also teaches overcoming such a disadvantage by adding 0.1 to 20% by wt. of polyacrylate resin to the composition (column 1, lines 15-54, working examples in Table 1). In light of such teaching, it would have been obvious for one of ordinary skill in the art at the time the invention was made to include at least 0.1 to 20% by wt. of polyacrylate resin in the polyester resin compositions disclosed by Harashina et al. and thereby arrive at the presently cited claims.

(10) Response to Argument

Appellants highlight that the compositions of the present invention possess unique combination of properties in that they are simultaneously flame retardant, laser weldable, and have good impact resistance (Appeal Brief, pages 9-10). Examiner contends that such properties would necessarily be present when the prior art references of record are combined. Following paragraphs explain what the prior art references teach and why combining the references is within the scope of one of ordinary skill in the art.

The primary reference to Harashina et al. discloses compositions comprising polyester resins with improved flame retardancy through the use of phosphorus-containing phosphazene compound and phenolic resin combination, wherein each component in the combination may be

present in amounts of 1-40 parts by weight per 100 parts of polyester resin. The prior art discloses that other flame retardants that may be optionally included in the compositions. Working examples in Table 2 disclose compositions comprising polyester, phosphorus-containing phosphazene compound, novolac-based phenolic resin and filler while example 13 further includes resorcinol bis(dixylyl phosphate) in the composition. The amount of polyester, phosphorus-containing flame retardant, phenolic resin and inorganic filler in the disclosed working examples is within the presently claimed range of claims 1 and 2.

The prior art further discloses that **since the flame retardant has a phenolic resin, the flame-retardancy can be imparted to the polyalkylene terephthalate-series resin with inhibiting the decline in a molecular weight and a mechanical property (e.g. strength, impact strength)** of the polyalkylene terephthalate- series resin. In particular, the phosphazene compound is combined with the phenolic resin so that the polyalkylene terephthalate- series resin is provided higher flame retardant compared to the case of using the phosphazene compound singly (page 18, lines 10-18). In other words, the prior art teaches that the phenolic resin not only aids in maintaining the impact strength of the polyalkylene terephthalate-series resin but also contributes towards improving the flame retardancy of the resin.

The prior art to Harashina et al. does not teach 1 to 25% by wt., based on the total weight of the composition, of thermoplastic acrylic polymer.

The prior art to Takahashi et al. is in an analogous field and recognizes that the addition of flame retardants to polybutylene terephthalate resin to mitigate the flammability of PBT results in a decrease in **impact resistance** and extensibility of the molding composition. The

prior art teaches overcoming such a disadvantage by adding 0.1 to 20% by wt. of polyacrylate resin to the polybutylene terephthalate resins (column 1, lines 15-54, working examples in Table 1). With regard to the flame retardant, Takahashi et al. disclose that any halogen compound or phosphorus compound may be used in the compositions (col. 3, lines 10-15). Thus, the phosphazene compound and resorcinol bis(dixylyl phosphate) of Harashina et al. read on the phosphorus compound of Takahashi et al.

In essence, Harashina et al. teach that phenolic resin in the compositions helps maintain the impact strength of polyester resin and Takahashi et al. teach that polyacrylate-based impact modifier, in an amount of 0.1-20% by weight based on the total weight of the composition, helps improve the impact resistance and extensibility of the polyester composition. Given that the primary and the secondary reference, both teach two different additives for improving the mechanical strength of flame-retardant polyester resins, it would have been obvious to one of ordinary skill in the art to use a combination of the two additives and thereby arrive at the presently claimed invention.

It is well settled that it is *prima facie* obvious to combine two ingredients, each of which is targeted by the prior art to be useful for the same purpose. *In re Lindner* 457 F.2d 506,509, 173 USPQ 356, 359 (CCPA 1972). Also, case law holds that “it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art.” *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

Furthermore, since the presently claimed composition is obvious over the combined teachings of Harashina et al. and Takahashi et al., the properties associated with the composition would necessarily be present when the references are combined. Thus, the unique combination of properties, i. e. flame retardancy, laser weldability and good impact resistance of the flame resistant polyester resin compositions disclosed in the instant invention would be realized by combining the prior art references of record.

(11) Related Proceedings

No decision rendered by court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Satya B. Sastri/

Examiner

Art Unit 1796

SS

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Art Unit: 1796

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